

3.5 Showing Lines are Parallel

Postulate 9

Corresponding Angle ConverseIf corresponding \angle s are \cong , then the lines are \parallel .

Theorem 3.8

Alternate Interior Angle ConverseIf alternate interior \angle s are \cong , then the lines are \parallel .

Theorem 3.9

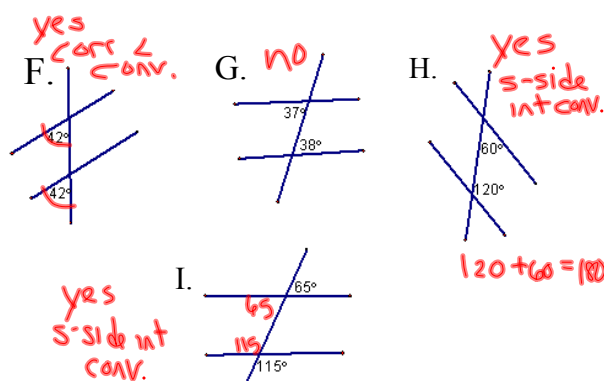
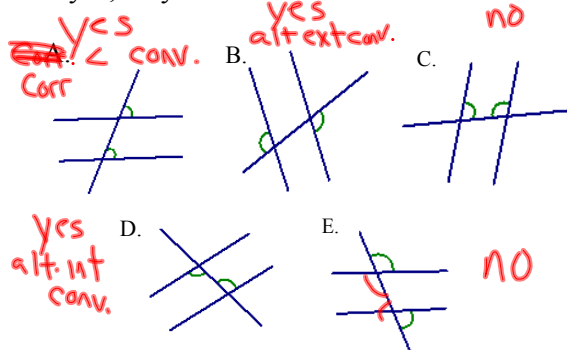
Alternate Exterior Angle ConverseIf alternate exterior \angle s are \cong , then the lines are \parallel .

Theorem 3.10

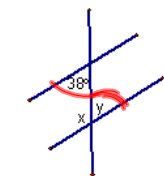
Same-side Interior Angle ConverseIf same-side interior \angle s are supplementary, then the lines are \parallel .

Are the given lines parallel?

If yes, why?



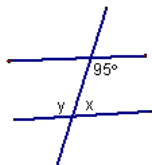
Find the value for x and y, so that the lines are parallel.



$$y = 38$$

$$x = 142^\circ$$

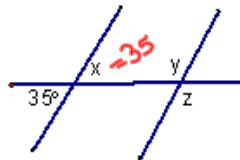
$$\begin{array}{r} 180 \\ - 38 \\ \hline \end{array}$$



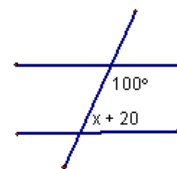
$$y = 95$$

$$x = 85$$

$$\begin{array}{r} 180 \\ - 95 \\ \hline \end{array}$$



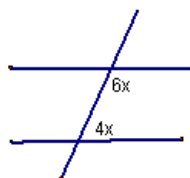
$$\begin{array}{r} 180 \\ - 35 \\ \hline 145 = y \\ 145 = z \end{array}$$



$$x + 20 + 100 = 180$$

$$x + 120 = 180$$

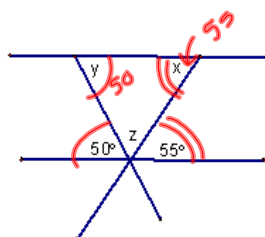
$$x = 60$$



$$4x + 6x = 180$$

$$10x = 180$$

$$x = 18$$



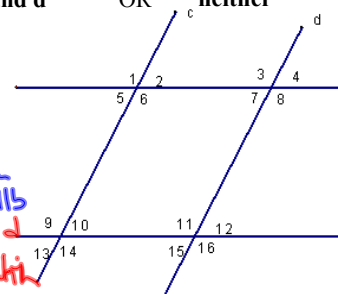
$$x = 55$$

$$y = 50$$

$$\begin{array}{r} 180 \\ - 55 \\ \hline 125 = z \end{array}$$

Which lines are parallel based on the given information?
a and b OR c and d OR neither

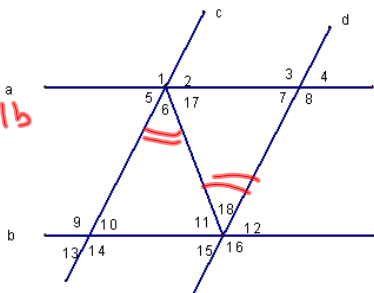
- $\angle 1 \cong \angle 9$ *a || b*
- $\angle 13 \cong \angle 15$ *c || d*
- $\angle 7 \cong \angle 12$ *a || b*
- $\angle 3 \cong \angle 16$ *a || b*
- $\angle 1 \cong \angle 16$ *Neither*
- $m\angle 8 + m\angle 12 = 180$ *a || b*
- $m\angle 2 + m\angle 3 = 180$ *c || d*
- $m\angle 10 + m\angle 15 = 180$ *Neither*
- $\angle 13 \cong \angle 12$ *c || d*
- $\angle 1 \cong \angle 6$ *Neither*



11. $\angle 11 \cong \angle 17$

a||b

12. $\angle 18 \cong \angle 6$

c||d

HW

p. 139-142

#s 3-5, 10-15, 18-21, 24-29, 35, 36